Forestry for Development - Proceedings of the Annual Forestry Symposium 1995, Sri Lanka,15-16 December 1995. (Eds. Amarasekera, H S and Banyard, S G). Published by Department of Forestry and Environmental Science, University of Sri Jayewardenepura, Sri Lanka (1996)

TIMBER CRISIS IN SRI LANKA AND SUBSTITUTION THROUGH WOOD BASED COMPOSITE MATERIALS

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ABSTRACT

Timber is one of the most important raw materials, used by man even before the Bronze Age. In contrast to other materials, timber is known as a living material, and substitution of timber with any other commodity is not an easy proposition. Demand for timber in Sri Lanka is increasing annually. It is distressing to find that in Sri Lanka losses account for more than 40% during the processing of logs to sawn timber. The conversiost of wood waste into composite materials presents one of the best technological solutions available to reduce this loss. Timber waste can be converted into several composite materials such as lamin wood, blockboard and cemboard. There are several national benefits in the use of lamin wood; savings in the countries gross timber consumption, reduction of environmental problems and saving of foreign exchange. Laminated timber can be manufactured to substitute massive wood beams using low grade timber and wood waste. However, one major problem prevents the setting up of such an industry in Sri Lanka - the industry does not offer a sufficiently high profile for the investor as the capital investment required is high. Hence, government support for such an enterprise is necessary. The national interest requires a government policy to embark on such a project, particularly when considering the environmental and waste minimisation aspects. Work has been carried out and sufficient data is available to commence a pilot plant for the manufacture of laminated timber if interest is shown by an entrepreneur. Currently, negotiations are in progress to start an industry to manufacture usable panel-like materials using wood waste with a cooperative society of timber industrialist in Moratuwa. Here interest is shown not only on profit but on minimising waste and reducing environmental pollution.

INTRODUCTION

Timber is one of the most important raw materials, used by man even before the bronze age. The value of timber has not diminished even after the advent of materials such as iron, copper, aluminium and plastics. In contrast to these materials, timber is known as a living material owing to its properties of expansion, and warping movements. Consequently, substitution of timber with any other commodity is not an easy proposition.

The Forestry Master Plan revision gives the statistics of timber utilization as follows :

DEMAND OF TIMBER IN SRI LANKA IN LOG FORM

In the year 1995	1.350 million cubic metres
In the year 2000	1.444 million cubic metres
In the year 2020	1.868 million cubic metres

DEMAND OF TIMBER IN SAWN TIMBER FORM :

Year	Requirements	Local Supply	Imports
1993	544000	515000	29000
1994	555000	526000	29000
1995	567000	537000	30000
1996	567000	537000	30000
1997	567000	537000	30000
1998	567000	537000	30000
1999	567000	537000	30000
2000	626000	592000	34000
2020	885000	616000	269000

With this scenario, it is distressing to find that losses in Sri Lanka account for more than 40% during the processing from logs to sawn timber. The actual loss from the tree to sawn timber is more than 60%. This colossal waste of a valuable resource must be minimised in order to conserve the already depleted forest cover in the country.

The conversion of wood waste into composite materials presents one of the best technological solutions available to reduce this loss. Timber waste such as slash, off-cuts and core rolls can be converted into several composite materials. These can be categorised as:

1. Laminated timber (lamin wood)
2. Composite/ block board (for substitution of massive wood)
3. Cem Board (cement wood waste and binder mixed material)
4. Laminated straw board or rice husk board like veneered chip board

According to an FAO report (1980), the forest cover of Sri Lanka has been reduced from 2.5 million hectares (44% of total land area) in 1956 to 1.44 million hectares (24% of land area) in 1980. In the long term such removal of forest cover creates other problems such as soil erosion, drought and disturbances of wild life. The reduction in the consumption of timber through the use of substitutes such as composites, will also give associated benefits to the environment.

Sri Lanka is dependent on imported logs as well as on locally sawn timber or veneer as raw material to start or continue the existing timber industry in the supply of plywood, multi-ply boards, doors etc. Consequently, optimum use and maximum output is an

essential requisite in order to sustain the timber based industry. One of the main reasons for the closure of the Ceylon Plywood Corporation Wood working complex, was the non-availability of local raw materials. Currently, the import of timber in log form is cheaper than processing local materials.

Hence the development of composite materials based on wood waste would be a practical solution to minimizing the wastes inherent in the processing of wood in Sri Lanka and also provide substitutes for conventional timber based products.

NATIONAL BENEFITS IN THE USE OF COMPOSITE MATERIALS BASED ON TIMBER

The following benefits resulting from the use of composite materials are recognised:

(a) A saving in the country's gross timber consumption and hence decrease in the rate of deforestation in Sri Lanka

(b) A reduction in environmental problems due to the decrease of deforestation

(c) A saving of foreign exchange through the reduction in timber imports

(d) The provision of building materials for the National Housing programme launched by the Government

(e) The possibility of developing cheaper wood based beams for low cost housing programmes

(f) The provision of support to the poverty alleviation programme

(g) The provision of new job opportunities to help solve unemployment problems

TECHNOLOGY AVAILABILITY AND POSSIBLE SOLUTIONS

Laminated timber technology has been known in European countries for more than five decades. Great use is made of laminated and composite board technology in the Western world. Japan manufactures beams and other structural material from laminated wood using low grade timber imported form Malaysia. Thus, this industry is well established and the technology is readily available. One major problem impedes the setting up of such industries in Sri Lanka. They do not yield sufficient profit for the investor, as the capital investment for a computer operated turn-key factory is high. Hence, government support for such enterprises is necessary. Given the national benefits discussed above, it is well within the bounds of government policy to embark on such a project, particularly when the environmental and waste minimization aspects of this option are taken into account.

Nevertheless, work has been carried out and sufficient data is available to commence a pilot plant for the manufacture of laminated timber in Sri Lanka if interest is shown by an entrepreneur. Currently, negotiations are in progress to start an industry to manufacture usable panel-like materials using wood waste with a cooperative society of timber industrialist in Moratuwa. Here interest is shown not only in profit but in minimising waste and reducing environmental pollution.